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THE EARTH RADIATION BUDGET EXPERIMENT

by

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DATA ANALYSIS: The Earth Radiation Budget Experiment (ERBE) data studied at present are:

1. The solar data from solar monitors of the ERBE onboard ERBS, NOAA-9, and NOAA-10 spacecraft.
2. Investigation of the ¹colocated satellite altitude irradiances from ERBS and Nimbus-7 Earth Radiation Budget measurements.
3. Analysis of the time- and space- averaged radiation budget products from ERBS and Nimbus-7 ERBE.

1. Solar Data from ERBS, NOAA-9, and NOAA-10.

The solar total irradiance data obtained by the ERBE solar monitors serve as a calibration check on the earth viewing radiometers, as well as provide the experimental value of the solar constant needed in the net radiation computations.

Solar data from the ERBE experiments are analyzed, and a comparative study of the data with solar measurements made for the same period from Solar Maximum Mission Active Cavity Radiometer Irradiance Monitor experiment and the Nimbus-7 Earth Radiation Budget Measurements. The data sets available from the ERBE for a period of 2 years from launch are archived at the NSSDC, GSFC, and are available to the scientific community for investigations.

2. Investigation of the colocated satellite altitude irradiances from ERBS and Nimbus-7 Earth Radiation Budget Measurements.

The sun-synchronous, near-local-noon Nimbus-7 satellite has coincident orbital intersections with the non-sun-synchronous ERBS spacecraft. The objective here is to compare the WFOV and MFOV (wide and medium field-of-view) observations of the ERBS/ERBE, and the Nimbus-7 ERB data sets at the points of their orbital intersections.

3. Globally and zonally averaged ERBE/ERBS data.

Investigations of the globally and zonally averaged ERB obtained from the ERBS scanner, MFOV and WFOV and the Nimbus-7 WFOV is being carried out to assess the sensor performance.

The data analysis is carried out in collaboration with the Nimbus-7 ERB processing team, managed by H. Lee Kyle, Code 636. These studies have significantly contributed to the ERBE sensor calibration and performance evaluation, and data validation. Besides, it is useful to assess the relative accuracy of the Nimbus-7 ERB data sets (began in 1978), and to establish long-term earth radiation budget data sets for scientific investigations.